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Pro Val Lys Glu Ala Glu Lys Met Ile Ile Ser Tyr Phe Thr Leu Tyr 465 470 475 480

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Met Ile Ile Gln Val His Asp Glu Leu Val Phe Glu Val Pro Asp Glu 565 570 575

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Phe Asn Cys Glu Ile Val Gly Ile Ser Val Ser Phe Lys Pro Lys Thr
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Ala Tyr Tyr Ile Pro Leu His His Arg Asn Ala Gln Asn Leu Asp Glu
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8

Glu Val Asn Glu Glu Met Arg Arg Val Gly Lys Met Val Asn Phe Ser $405 \,$ 410 $\,$ 415

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Pro Val Lys Glu Ala Glu Lys Met Ile Ile Ser Tyr Phe Thr Leu Tyr 435 440 445

Pro Lys Val Arg Ser Tyr Ile Gln Gln Val Val Ala Glu Ala Lys Glu
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535

530

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Hi:	s Glu 5	Ile	Val	Pro	Leu 310	Ile	Leu	Glu	Tyr	Arg 315	Lys	Ile	Gln	Lys	1eu 320
Lys	s Ser	Thr	Tyr	Ile 325	Asp	Thr	Leu	Pro	Lys 330	Leu	Val	Asn	Pro	Lys 335	Thr
Gl	y Arg	Ile	His 340	Ala	Ser	Phe	His	Gln 345	Thr	Gly	Thr	Ala	Thr 350	Gly	Arg
Lei	ı Ser	Ser 355	Ser	Asp	Pro	Asn	Leu 360	Gln	Asn	Leu	Pro	Thr 365	Lys	Ser	Glu
Gli	a Gly 370	Lys	Glu	Ile	Arg	Lys 375	Ala	Ile	Val	Pro	Gln 380	Asp	Pro	Asp	Trp
Tr ₁	o Ile	Val	Ser	Ala	Asp 390	Tyr	Ser	Gln	Ile	Glu 395	Leu	Arg	Ile	Leu	Ala 400
His	s Leu	Ser	Gly	Asp 405	Glu	Asn	Leu	Val	Lys 410	Ala	Phe	Glu	Glu	Gly 415	Ile
Ası	o Val	His	Thr 420	Leu	Thr	Ala	Ser	Arg 425	Ile	Tyr	Asn	Val	Lys 430	Pro	Glu
Gli	ı Val	Asn 435	Glu	Glu	Met	Arg	Arg 440	Val	Gly	Lys	Met	Val 445	Asn	Phe	Ser
Ile	e Ile 450	Tyr	Gly	Val	Thr	Pro 455	Tyr	Gly	Leu	Ser	Val 460	Arg	Leu	Gly	Ile
Pro 46	o Val	Lys	Glu	Ala	Glu 470	Lys	Met	Ile	Ile	Ser 475	Tyr	Phe	Thr	Leu	Tyr 480
Pro) Lys	Val	Arg	Ser 485	Tyr	Ile	Gln	Gln	Val 490	Val	Ala	Glu	Ala	Lys 495	Glu
Ly	s Gly	Tyr	Val 500	Arg	Thr	Leu	Phe	Gly 505	Arg	Lys	Arg	Asp	Ile 510	Pro	Gln
Lei	u Met	Ala 515	Arg	Asp	Lys	Asn	Thr 520	Gln	Ser	Glu	Gly	Glu 525	Arg	Ile	Ala
Il	e Asn 530	Thr	Pro	Ile	Gln	Gly 535	Thr	Ala	Ala	Asp	Ile 540	Ile	Lys	Leu	Ala
Me 54	t Ile	Asp	Ile	Asp	Glu 550	Glu	Leu	Arg	Lys	Arg 555	Asn	Met	Lys	Ser	Arg 560

Met Ile Ile Gln Val His Asp Glu Leu Val Phe Glu Val Pro Asp Glu 570 Glu Lys Glu Glu Leu Val Asp Leu Val Lys Asn Lys Met Thr Asn Val Val Lys Leu Ser Val Pro Leu Glu Val Asp Ile Ser Ile Gly Lys Ser 600 Trp Ser 610 <210> 20 <211> 39 <212> DNA <213> Artificial/Unknown <220> <221> misc_feature <223> Synthetic <400> 20 39 taaqtqatat ctgcatcctc gcaggagaag ttcgcagcc <210> 21 <211> 39 <212> DNA <213> Artificial/Unknown <220> <221> misc feature <223> Synthetic <400> 21 39 acaaggctgc gaacttctcc tgcgaggatg cagatatca <210> 22 <211> 1833 <212> DNA <213> Artificial/Unknown <220>

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gag gtt cca tct ttt gcc ctg gac ctt gaa acg tcc tcc ctt gac ccg 14. Glu Val Pro Ser Phe Ala Leu Asp Leu Glu Thr Ser Ser Leu Asp Pro 35 40 45	4
ttc aac tgt gag ata gtc ggc atc tcc gtg tcg ttc aaa ccg aaa aca 19 Phe Asn Cys Glu Ile Val Gly Ile Ser Val Ser Phe Lys Pro Lys Thr 50 55 60	2
gct tat tac att cca ctt cat cac aga aac gcc cag aat ctt gat gaa 24 Ala Tyr Tyr Ile Pro Leu His His Arg Asn Ala Gln Asn Leu Asp Glu 65 70 75 80	0
aca ctg gtg ctg tcg aag ttg aaa gag atc ctc gaa gac ccg tct tcg 28 Thr Leu Val Leu Ser Lys Leu Lys Glu Ile Leu Glu Asp Pro Ser Ser 85 90 95	.8
aag att gtg ggt cag aac ctg aag tac gac tac aag gtt ctt atg gta 33 Lys Ile Val Gly Gln Asn Leu Lys Tyr Asp Tyr Lys Val Leu Met Val 100 105 110	.6
aag ggt ata tog cca gtt tat ccg cat ttt gac acg atg ata gct gca 38 Lys Gly Ile Ser Pro Val Tyr Pro His Phe Asp Thr Met Ile Ala Ala 115 120 125	4
tat ttg ctg gag cca aac gag aaa aaa ttc aat ctc gaa gat ctg tct 43 Tyr Leu Leu Glu Pro Asn Glu Lys Lys Phe Asn Leu Glu Asp Leu Ser 130 135 140	:2
ttg aaa ttt ctc gga tac aaa atg acg tct tat cag gaa ctg atg tcg Leu Lys Phe Leu Gly Tyr Lys Met Thr Ser Tyr Gln Glu Leu Met Ser 145 150 155 160	30
ttt tcc tca cca ctt ttt ggt ttc agc ttt gcg gat gtt ccg gta gac Phe Ser Ser Pro Leu Phe Gly Phe Ser Phe Ala Asp Val Pro Val Asp 165 170 175	8 8
aag gct gcg aac ttc tcc tgc gag gat gca gat atc act tat agg ctc 57 Lys Ala Ala Asn Phe Ser Cys Glu Asp Ala Asp Ile Thr Tyr Arg Leu 180 185 190	16
tac aag ata ctc agc atg aag ctc cat gaa gcg gaa ctt gag aac gtc 62 Tyr Lys Ile Leu Ser Met Lys Leu His Glu Ala Glu Leu Glu Asn Val 195 200 205	24

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ttg Leu 225	aac Asn	Gly 999	gtg Val	tat Tyr	gtg Val 230	gac Asp	aca Thr	gaa Glu	ttc Phe	ctg Leu 235	aaa Lys	aag Lys	ctc Leu	tcg Ser	gag Glu 240	720
gag Glu	tac Tyr	ggc Gly	aaa Lys	aag Lys 245	ctc Leu	gag Glu	gaa Glu	ctg Leu	gcc Ala 250	gaa Glu	aaa Lys	atc Ile	tac Tyr	cag Gln 255	ata Ile	768
gca Ala	gga Gly	gag Glu	ccc Pro 260	ttc Phe	aac Asn	atc Ile	aat Asn	tct Ser 265	cca Pro	aaa Lys	cag Gln	gtt Val	tca Ser 270	aag Lys	atc Ile	816
ctt Leu	ttt Phe	gag Glu 275	aag Lys	ctg Leu	gga Gly	ata Ile	aaa Lys 280	ccc Pro	cgt Arg	gga Gly	aaa Lys	acg Thr 285	aca Thr	aaa Lys	aca Thr	864
gga Gly	gcg Ala 290	tac Tyr	tct Ser	acc Thr	agg Arg	ata Ile 295	gag Glu	gtg Val	ttg Leu	gaa Glu	gag Glu 300	ata Ile	gcg Ala	aat Asn	gag Glu	912
cac His 305	gag Glu	ata Ile	gta Val	ccc Pro	ctc Leu 310	att Ile	ctc Leu	gag Glu	tac Tyr	aga Arg 315	aag Lys	atc Ile	cag Gln	aaa Lys	ctg Leu 320	960
								ccg Pro								1008
gga Gly	aga Arg	att Ile	cat His 340	gca Ala	tct Ser	ttc Phe	cac His	cag Gln 345	acg Thr	ggt Gly	acc Thr	gcc Ala	act Thr 350	ggc Gly	agg Arg	1056
ttg Leu	agt Ser	agc Ser 355	agt Ser	gat Asp	cca Pro	aat Asn	ctt Leu 360	cag Gln	aat Asn	ctt Leu	ccg Pro	aca Thr 365	aag Lys	agc Ser	gaa Glu	1104
gag Glu	gga Gly 370	aaa Lys	gaa Glu	att Ile	aga Arg	aaa Lys 375	gcg Ala	att Ile	gtg Val	ccc Pro	cag Gln 380	gat Asp	cca Pro	gac Asp	tgg Trp	1152
tgg Trp 385	atc Ile	gtc Val	agt Ser	gcg Ala	gat Asp 390	tat Tyr	tcc Ser	caa Gln	ata Ile	gaa Glu 395	ctc Leu	aga Arg	atc Ile	ctc Leu	gct Ala 400	1200
cat His	ctc Leu	agt Ser	ggt Gly	gat Asp 405	gag Glu	aac Asn	ctt Leu	gtg Val	aag Lys 410	gcc Ala	ttc Phe	gag Glu	gag Glu	ggc Gly 415	atc Ile	1248
gat Asp	gtg Val	cac His	acc Thr 420	ttg Leu	act Thr	gcc Ala	tcc Ser	agg Arg 425	atc Ile	tac Tyr	aac Asn	gta Val	aag Lys 430	cca Pro	gaa Glu	1296
gaa Glu	gtg Val	aac Asn 435	gaa Glu	gaa Glu	atg Met	cga Arg	cgg Arg 440	gtt Val	gga Gly	aag Lys	atg Met	gtg Val 445	Asn	ttc Phe	tct Ser	1344

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ccg gtt aaa gaa gca gaa aag atg Pro Val Lys Glu Ala Glu Lys Met 465 470		Phe Thr Leu T	
cca aag gtg cga agc tac atc cag Pro Lys Val Arg Ser Tyr Ile Gln 485			
aag ggc tac gtc agg act ctc ttt Lys Gly Tyr Val Arg Thr Leu Phe 500			
ctc atg gca agg gac aag aac acc Leu Met Ala Arg Asp Lys Asn Thr 515 520			
ata aac acc ccc att cag gga acg Ile Asn Thr Pro Ile Gln Gly Thr 530 535		lle Lys Leu A	
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Glu Val Pro Ser Phe Ala Leu Asp Leu Glu Thr Ser Ser Leu Asp Pro 35 40 45

Phe Asn Cys Glu Ile Val Gly Ile Ser Val Ser Phe Lys Pro Lys Thr 50 55 60

Ala Tyr Tyr Ile Pro Leu His His Arg Asn Ala Gln Asn Leu Asp Glu 65 70 75 80

Thr Leu Val Leu Ser Lys Leu Lys Glu Ile Leu Glu Asp Pro Ser Ser 90 95

Lys Ile Val Gly Gln Asn Leu Lys Tyr Asp Tyr Lys Val Leu Met Val

Lys Gly Ile Ser Pro Val Tyr Pro His Phe Asp Thr Met Ile Ala Ala 115 120 125

Tyr Leu Leu Glu Pro Asn Glu Lys Lys Phe Asn Leu Glu Asp Leu Ser 130 135 140

Leu Lys Phe Leu Gly Tyr Lys Met Thr Ser Tyr Gln Glu Leu Met Ser 145 150 155 160

Phe Ser Ser Pro Leu Phe Gly Phe Ser Phe Ala Asp Val Pro Val Asp 165 170 175

Lys Ala Ala Asn Phe Ser Cys Glu Asp Ala Asp Ile Thr Tyr Arg Leu 180 185 190

Tyr Lys Ile Leu Ser Met Lys Leu His Glu Ala Glu Leu Glu Asn Val 195 200 205

Phe Tyr Arg Ile Glu Met Pro Leu Val Asn Val Leu Ala Arg Met Glu 210 215 220

Leu Asn Gly Val Tyr Val Asp Thr Glu Phe Leu Lys Lys Leu Ser Glu 225 230 235 240

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- Ala Gly Glu Pro Phe Asn Ile Asn Ser Pro Lys Gln Val Ser Lys Ile 260 265 270
- Leu Phe Glu Lys Leu Gly Ile Lys Pro Arg Gly Lys Thr Thr Lys Thr 275 280 285
- Gly Ala Tyr Ser Thr Arg Ile Glu Val Leu Glu Glu Ile Ala Asn Glu 290 295 300
- His Glu Ile Val Pro Leu Ile Leu Glu Tyr Arg Lys Ile Gln Lys Leu 305 310 315
- Lys Ser Thr Tyr Ile Asp Thr Leu Pro Lys Leu Val Asn Pro Lys Thr 325 330 335
- Gly Arg Ile His Ala Ser Phe His Gln Thr Gly Thr Ala Thr Gly Arg 340 345
- Leu Ser Ser Ser Asp Pro Asn Leu Gln Asn Leu Pro Thr Lys Ser Glu 355 360 365
- Glu Gly Lys Glu Ile Arg Lys Ala Ile Val Pro Gln Asp Pro Asp Trp 370 380
- Trp Ile Val Ser Ala Asp Tyr Ser Gln Ile Glu Leu Arg Ile Leu Ala 385 390 395 400
- His Leu Ser Gly Asp Glu Asn Leu Val Lys Ala Phe Glu Glu Gly Ile 405 410 415
- Asp Val His Thr Leu Thr Ala Ser Arg Ile Tyr Asn Val Lys Pro Glu 420 425 430
- Glu Val Asn Glu Glu Met Arg Arg Val Gly Lys Met Val Asn Phe Ser 435 440 445
- Ile Ile Tyr Gly Val Thr Pro Tyr Gly Leu Ser Val Arg Leu Gly Ile 450 460
- Pro Val Lys Glu Ala Glu Lys Met Ile Ile Ser Tyr Phe Thr Leu Tyr 465 470 475
- Pro Lys Val Arg Ser Tyr Ile Gl
n Gl
n Val Val Ala Glu Ala Lys Glu 485 $$ 490 $$ 495

Lys Gly Tyr Val Arg Thr Leu Phe Gly Arg Lys Arg Asp Ile Pro Gln 500 505 510

Leu Met Ala Arg Asp Lys Asn Thr Gln Ser Glu Gly Glu Arg Ile Ala 515 520 525

Ile Asn Thr Pro Ile Gln Gly Thr Ala Ala Asp Ile Ile Lys Leu Ala 530 540

Met Ile Asp Ile Asp Glu Glu Leu Arg Lys Arg Asn Met Lys Ser Arg 545 550 555

Met Ile Ile Gln Val His Asp Glu Leu Val Phe Glu Val Pro Asp Glu 565 570 575

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Trp Ser 610

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gag gtt cca tct ttt gcc ctg gac ctt gaa acg tcc tcc ctt gac ccg Glu Val Pro Ser Phe Ala Leu Asp Leu Glu Thr Ser Ser Leu Asp Pro 35 40 45	144
ttc aac tgt gag ata gtc ggc atc tcc gtg tcg ttc aaa ccg aaa aca Phe Asn Cys Glu Ile Val Gly Ile Ser Val Ser Phe Lys Pro Lys Thr 50 55 60	192
gct tat tac att cca ctt cat cac aga aac gcc cag aat ctt gat gaa Ala Tyr Tyr Ile Pro Leu His His Arg Asn Ala Gln Asn Leu Asp Glu 65 70 75 80	240
aca ctg gtg ctg tcg aag ttg aaa gag atc ctc gaa gac ccg tct tcg Thr Leu Val Leu Ser Lys Leu Lys Glu Ile Leu Glu Asp Pro Ser Ser 85 90 95	288
aag att gtg ggt cag aac ctg aag tac gac tac aag gtt ctt atg gta Lys Ile Val Gly Gln Asn Leu Lys Tyr Asp Tyr Lys Val Leu Met Val 100 105 110	336
aag ggt ata tcg cca gtt tat ccg cat ttt gac acg atg ata gct gca Lys Gly Ile Ser Pro Val Tyr Pro His Phe Asp Thr Met Ile Ala Ala 115 120 125	384
tat ttg ctg gag cca aac gag aaa aaa ttc aat ctc gaa gat ctg tct Tyr Leu Leu Glu Pro Asn Glu Lys Lys Phe Asn Leu Glu Asp Leu Ser 130 135 140	432
ttg aaa ttt ctc gga tac aaa atg acg tct tat cag gaa ctg atg tcg Leu Lys Phe Leu Gly Tyr Lys Met Thr Ser Tyr Gln Glu Leu Met Ser 145 150 155	480
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aag gct gcg aac tac tcc tgc gag aat gct gac atc act tat agg ctc Lys Ala Ala Asn Tyr Ser Cys Glu Asn Ala Asp Ile Thr Tyr Arg Leu 180 185 190	576
tac aag ata ctc agc atg aag ctc cat gaa gcg gaa ctt gag aac gtc Tyr Lys Ile Leu Ser Met Lys Leu His Glu Ala Glu Leu Glu Asn Val 195 200 205	624

											ctt Leu 220					672
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											gag Glu 300					912
											aag Lys					960
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											ctc Leu					1200
cat His	ctc Leu	agt Ser	ggt Gly	gat Asp 405	gag Glu	aac Asn	ctt Leu	gtg Val	aag Lys 410	gcc Ala	ttc Phe	gag Glu	gag Glu	ggc Gly 415	atc Ile	1248
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ccg gt Pro Va 465															1440
cca aa Pro Ly															1488
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ctc at Leu Me															1584
ata aa Ile As 53	n Thr														1632
atg at Met Il 545															1680
atg at Met Il															1728
gaa aa Glu Ly	a gaa s Glu	gaa Glu 580	cta Leu	gtt Val	gat Asp	ctg Leu	gtg Val 585	aag Lys	aac Asn	aaa Lys	atg Met	aca Thr 590	aat Asn	gtg Val	1776
gtg aa Val Ly															1824
tgg tc Trp Se 61	r														1833
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Phe Asn Cys Glu Ile Val Gly Ile Ser Val Ser Phe Lys Pro Lys Thr 50 55 60

Ala Tyr Tyr Ile Pro Leu His His Arg Asn Ala Gln Asn Leu Asp Glu 65 70 75 80

Thr Leu Val Leu Ser Lys Leu Lys Glu Ile Leu Glu Asp Pro Ser Ser 85 90 95

Lys Ile Val Gly Gln Asn Leu Lys Tyr Asp Tyr Lys Val Leu Met Val 100 105 110

Lys Gly Ile Ser Pro Val Tyr Pro His Phe Asp Thr Met Ile Ala Ala 115 120 125

Tyr Leu Leu Glu Pro Asn Glu Lys Lys Phe Asn Leu Glu Asp Leu Ser 130 140

Leu Lys Phe Leu Gly Tyr Lys Met Thr Ser Tyr Gln Glu Leu Met Ser 145 150 155

Phe Ser Ser Pro Leu Phe Gly Phe Ser Phe Ala Asp Val Pro Val Asp 165 170 175

Lys Ala Ala Asn Tyr Ser Cys Glu Asn Ala Asp Ile Thr Tyr Arg Leu 180 185

Tyr Lys Ile Leu Ser Met Lys Leu His Glu Ala Glu Leu Glu Asn Val 195 200 205

Phe Tyr Arg Ile Glu Met Pro Leu Val Asn Val Leu Ala Arg Met Glu 210 215 220

Leu Asn Gly Val Tyr Val Asp Thr Glu Phe Leu Lys Lys Leu Ser Glu 225 230 235 240

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Ala	Gly	Glu	Pro 260	Phe	Asn	Ile	Asn	Ser 265	Pro	Lys	Gln	Val	Ser 270	Lys	Ile
Leu	Phe	Glu 275	Lys	Leu	Gly	Ile	Lys 280	Pro	Arg	Gly	Lys	Thr 285	Thr	Lys	Thr
Gly	Ala 290	Tyr	Ser	Thr	Arg	Ile 295	Glu	Val	Leu	Glu	Glu 300	Ile	Ala	Asn	Glu
His 305	Glu	Ile	Val	Pro	Leu 310	Ile	Leu	Glu	Tyr	Arg 315	Lys	Ile	Gln	Lys	Leu 320
Lys	Ser	Thr	Tyr	Ile 325	Asp	Thr	Leu	Pro	Lys 330	Leu	Val	Asn	Pro	Lys 335	Thr
Gly	Arg	Ile	His 340	Ala	Ser	Phe	His	Gln 345	Thr	Gly	Thr	Ala	Thr 350	Gly	Arg
Leu	Ser	Ser 355	Ser	Asp	Pro	Asn	Leu 360	Gln	Asn	Leu	Pro	Thr 365	Lys	Ser	Glu
Glu	Gly 370	Lys	Glu	Ile	Arg	Lys 375	Ala	Ile	Val	Pro	Gln 380	Asp	Pro	Asp	Trp
Trp 385	Ile	Val	Ser	Ala	Asp 390	Tyr	Ser	Gln	Ile	Glu 395	Leu	Arg	Ile	Leu	Ala 400
His	Leu	Ser	Gly	Asp 405	Glu	Asn	Leu	Val	Lys 410	Ala	Phe	Glu	Glu	Gly 415	Ile
Asp	Val	His	Thr 420	Leu	Thr	Ala	Ser	Arg 425	Ile	Tyr	Asn	Val	Lys 430	Pro	Glu
Glu	Val	Asn 435	Glu	Glu	Met	Arg	Arg 440	Val	Gly	Lys	Met	Val 445	Asn	Phe	Ser
Ile	Ile 450	Tyr	Gly	Val	Thr	Pro 455	Tyr	Gly	Leu	Ser	Val 460	Arg	Leu	Gly	Ile
Pro 465	Val	Lys	Glu	Ala	Glu 470	Lys	Met	Ile	Ile	Ser 475	Tyr	Phe	Thr	Leu	Tyr 480
Pro	Lys	Val	Arg	Ser	Tyr	Ile	Gln	Gln	Val		Ala	Glu	Ala	Lys	Glu

Leu Met Ala Arg Asp Lys Asn Thr Gln Ser Glu Gly Glu Arg Ile Ala 515 520 525

Ile Asn Thr Pro Ile Gln Gly Thr Ala Ala Asp Ile Ile Lys Leu Ala 530 540

Met Ile Asp Ile Asp Glu Glu Leu Arg Lys Arg Asn Met Lys Ser Arg 545 550 560

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				aag Lys										288
				aac Asn										336
				gtt Val										384
				aac Asn										432
				tac Tyr 150										480
				ttt Phe		_			_	_	_	_	_	528
_	_			tcc Ser	 _	-	_	-						576
				atg Met										624

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g a g Glu	tac Tyr	ggc Gly	aaa Lys	aag Lys 245	ctc Leu	gag Glu	gaa Glu	ctg Leu	gcc Ala 250	gaa Glu	aaa Lys	atc Ile	tac Tyr	cag Gln 255	ata Ile	768
gca Ala	gga Gly	gag Glu	ccc Pro 260	ttc Phe	aac Asn	atc Ile	aat Asn	tct Ser 265	cca Pro	aaa Lys	cag Gln	gtt Val	tca Ser 270	aag Lys	atc Ile	816
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gga Gly	gcg Ala 290	tac Tyr	tct Ser	acc Thr	agg Arg	ata Ile 295	gag Glu	gtg Val	ttg Leu	gaa Glu	gag Glu 300	ata Ile	gcg Ala	aat Asn	gag Glu	912
cac His 305	gag Glu	ata Ile	gta Val	ccc Pro	ctc Leu 310	att Ile	ctc Leu	gag Glu	tac Tyr	aga Arg 315	aag Lys	atc Ile	cag Gln	aaa Lys	ctg Leu 320	960
aaa Lys	tcg Ser	acc Thr	tac Tyr	ata Ile 325	gac Asp	acc Thr	ctt Leu	ccg Pro	aaa Lys 330	ctt Leu	gtg Val	aac Asn	ccg Pro	aaa Lys 335	acc Thr	1008
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ttg Leu	agt Ser	agc Ser 355	agt Ser	gat Asp	cca Pro	aat Asn	ctt Leu 360	cag Gln	aat Asn	ctt Leu	ccg Pro	aca Thr 365	aag Lys	agc Ser	gaa Glu	1104
gag Glu	gga Gly 370	aaa Lys	gaa Glu	att Ile	aga Arg	aaa Lys 375	gcg Ala	att Ile	gtg Val	ccc Pro	cag Gln 380	gat Asp	cca Pro	gac Asp	tgg Trp	1152
tgg Trp 385	atc Ile	gtc Val	agt Ser	gcg Ala	gat Asp 390	tat Tyr	tcc Ser	caa Gln	ata Ile	gaa Glu 395	ctc Leu	aga Arg	atc Ile	ctc Leu	gct Ala 400	1200
cat His	ctc Leu	agt Ser	ggt Gly	gat Asp 405	gag Glu	aac Asn	ctt Leu	gtg Val	aag Lys 410	gcc Ala	ttc Phe	gag Glu	g a g Glu	ggc Gly 415	atc Ile	1248
gat Asp	gtg Val	cac His	acc Thr 420	ttg Leu	act Thr	gcc Ala	tcc Ser	agg Arg 425	atc Ile	tac Tyr	aac Asn	gta Val	aag Lys 430	cca Pro	gaa Glu	1296
gaa Glu	gtg Val	aac Asn 435	gaa Glu	gaa Glu	atg Met	cga Arg	cgg Arg 440	gtt Val	gga Gly	aag Lys	atg Met	gtg Val 445	aac Asn	ttc Phe	tct Ser	1344

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		aaa Lys														1440
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aag Lys	ggc Gly	tac Tyr	gtc Val 500	agg Arg	act Thr	ctc Leu	ttt Phe	gga Gly 505	aga Arg	aaa Lys	aga Arg	gat Asp	att Ile 510	ccc Pro	cag Gln	1536
ctc Leu	atg Met	gca Ala 515	agg Arg	gac Asp	aag Lys	aac Asn	acc Thr 520	cag Gln	tcc Ser	gaa Glu	ggc Gly	gaa Glu 525	aga Arg	atc Ile	gca Ala	1584
ata Ile	aac Asn 530	acc Thr	ccc Pro	att Ile	cag Gln	gga Gly 535	acg Thr	gcg Ala	gca Ala	gat Asp	ata Ile 540	ata Ile	aaa Lys	ttg Leu	gct Ala	1632
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	tct Ser 610															1833
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Phe Asn Cys Glu Ile Val Gly Ile Ser Val Ser Phe Lys Pro Lys Thr 50 55 60

Ala Tyr Tyr Ile Pro Leu His His Arg Asn Ala Gln Asn Leu Asp Glu 65 70 75 80

Thr Leu Val Leu Ser Lys Leu Lys Glu Ile Leu Glu Asp Pro Ser Ser 90 95

Lys Ile Val Gly Gln Asn Leu Lys Tyr Asp Tyr Lys Val Leu Met Val 100 105 110

Lys Gly Ile Ser Pro Val Tyr Pro His Phe Asp Thr Met Ile Ala Ala 115 120 125

Tyr Leu Leu Glu Pro Asn Glu Lys Lys Phe Asn Leu Glu Asp Leu Ser 130 135 140

Leu Lys Phe Leu Gly Tyr Lys Met Thr Ser Tyr Gln Glu Leu Met Ser 145 150 155

Phe Ser Ser Pro Leu Phe Gly Phe Ser Phe Ala Asp Val Pro Val Asp 165 170 175

Lys Ala Ala As
n Tyr Ser Cys Glu Asp Ala Asp Ile Thr Tyr Arg Leu 180 185 190

Tyr Lys Ile Leu Ser Met Lys Leu His Glu Ala Glu Leu Glu Asn Val 195 200 205

Phe Tyr Arg Ile Glu Met Pro Leu Val Asn Val Leu Ala Arg Met Glu 210 215 220

Leu Asn Gly Val Tyr Val Asp Thr Glu Phe Leu Lys Lys Leu Ser Glu 225 230 235 240

Glu Tyr Gly Lys Lys Leu Glu Glu Leu Ala Glu Lys Ile Tyr Gln Ile Ala Gly Glu Pro Phe Asn Ile Asn Ser Pro Lys Gln Val Ser Lys Ile 260 265 Leu Phe Glu Lys Leu Gly Ile Lys Pro Arg Gly Lys Thr Thr Lys Thr Gly Ala Tyr Ser Thr Arg Ile Glu Val Leu Glu Glu Ile Ala Asn Glu His Glu Ile Val Pro Leu Ile Leu Glu Tyr Arg Lys Ile Gln Lys Leu Lys Ser Thr Tyr Ile Asp Thr Leu Pro Lys Leu Val Asn Pro Lys Thr Gly Arg Ile His Ala Ser Phe His Gln Thr Gly Thr Ala Thr Gly Arg Leu Ser Ser Ser Asp Pro Asn Leu Gln Asn Leu Pro Thr Lys Ser Glu Glu Gly Lys Glu Ile Arg Lys Ala Ile Val Pro Gln Asp Pro Asp Trp 375 Trp Ile Val Ser Ala Asp Tyr Ser Gln Ile Glu Leu Arg Ile Leu Ala 390 His Leu Ser Gly Asp Glu Asn Leu Val Lys Ala Phe Glu Glu Gly Ile 405 Asp Val His Thr Leu Thr Ala Ser Arg Ile Tyr Asn Val Lys Pro Glu Glu Val Asn Glu Glu Met Arg Arg Val Gly Lys Met Val Asn Phe Ser 435 Ile Ile Tyr Gly Val Thr Pro Tyr Gly Leu Ser Val Arg Leu Gly Ile Pro Val Lys Glu Ala Glu Lys Met Ile Ile Ser Tyr Phe Thr Leu Tyr Pro Lys Val Arg Ser Tyr Ile Gln Gln Val Val Ala Glu Ala Lys Glu

490

495

Lys Gly Tyr Val Arg Thr Leu Phe Gly Arg Lys Arg Asp Ile Pro Gln Leu Met Ala Arg Asp Lys Asn Thr Gln Ser Glu Gly Glu Arg Ile Ala 520 Ile Asn Thr Pro Ile Gln Gly Thr Ala Ala Asp Ile Ile Lys Leu Ala Met Ile Asp Ile Asp Glu Glu Leu Arg Lys Arg Asn Met Lys Ser Arg Met Ile Ile Gln Val His Asp Glu Leu Val Phe Glu Val Pro Asp Glu 575 Glu Lys Glu Glu Leu Val Asp Leu Val Lys Asn Lys Met Thr Asn Val 580 Val Lys Leu Ser Val Pro Leu Glu Val Asp Ile Ser Ile Gly Lys Ser 600 Trp Ser 610 <210> 30 <211> 29 <212> DNA <213> Artificial/Unknown <220> <221> misc feature <223> Synthetic <400> 30 cctgaagtac gcgtacaagg ttcttatgg <210> 31 <211> 22 <212> DNA <213> Artificial/Unknown

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gag gtt cca tct ttt gcc ctg gac ctt gaa acg tcc tcc ctt gac ccg Glu Val Pro Ser Phe Ala Leu Asp Leu Glu Thr Ser Ser Leu Asp Pro 35 40 45	144
ttc aac tgt gag ata gtc ggc atc tcc gtg tcg ttc aaa ccg aaa aca Phe Asn Cys Glu Ile Val Gly Ile Ser Val Ser Phe Lys Pro Lys Thr 50 55 60	192
gct tat tac att cca ctt cat cac aga aac gcc cag aat ctt gat gaa Ala Tyr Tyr Ile Pro Leu His His Arg Asn Ala Gln Asn Leu Asp Glu 65 70 75 80	240
aca ctg gtg ctg tcg aag ttg aaa gag atc ctc gaa gac ccg tct tcg Thr Leu Val Leu Ser Lys Leu Lys Glu Ile Leu Glu Asp Pro Ser Ser 85 90 95	288
aag att gtg ggt cag aac ctg aag tac gcg tac aag gtt ctt atg gta Lys Ile Val Gly Gln Asn Leu Lys Tyr Ala Tyr Lys Val Leu Met Val 100 105 110	336
aag ggt ata tcg cca gtt tat ccg cat ttt gac acg atg ata gct gca Lys Gly Ile Ser Pro Val Tyr Pro His Phe Asp Thr Met Ile Ala Ala 115 120 125	384
tat ttg ctg gag cca aac gag aaa aaa ttc aat ctc gaa gat ctg tct Tyr Leu Leu Glu Pro Asn Glu Lys Lys Phe Asn Leu Glu Asp Leu Ser 130 135 140	432

ttg a Leu I 145	aaa Lys	ttt Phe	ctc Leu	gga Gly	tac Tyr 150	aaa Lys	atg Met	acg Thr	tct Ser	tat Tyr 155	cag Gln	gaa Glu	ctg Leu	atg Met	tcg Ser 160	480
ttt t Phe S	tcc Ser	tca Ser	cca Pro	ctt Leu 165	ttt Phe	ggt Gly	ttc Phe	agc Ser	ttt Phe 170	gcg Ala	gat Asp	gtt Val	ccg Pro	gta Val 175	gac Asp	528
aag g Lys <i>l</i>	gct Ala	gcg Ala	aac Asn 180	tac Tyr	tcc Ser	tgc Cys	gag Glu	gat Asp 185	gca Ala	gac Asp	atc Ile	act Thr	tat Tyr 190	agg Arg	ctc Leu	576
tac a Tyr I	aag Lys	ata Ile 195	ctc Leu	agc Ser	atg Met	aag Lys	ctc Leu 200	cat His	gaa Glu	gcg Ala	gaa Glu	ctt Leu 205	gag Glu	aac Asn	gtc Val	624
ttc t Phe	tac Tyr 210	agg Arg	ata Ile	gag Glu	atg Met	ccg Pro 215	ctt Leu	gtg Val	aac Asn	gtt Val	ctt Leu 220	gca Ala	cgc Arg	atg Met	gaa Glu	672
ttg a Leu <i>l</i> 225	aac Asn	gly aaa	gtg Val	tat Tyr	gtg Val 230	gac Asp	aca Thr	gaa Glu	ttc Phe	ctg Leu 235	aaa Lys	aag Lys	ctc Leu	tcg Ser	gag Glu 240	720
gag t Glu :	tac Tyr	ggc Gly	aaa Lys	aag Lys 245	ctc Leu	gag Glu	gaa Glu	ctg Leu	gcc Ala 250	gaa Glu	aaa Lys	atc Ile	tac Tyr	cag Gln 255	ata Ile	768
gca (816
ctt (Leu)																864
gga (Gly	gcg Ala 290	tac Tyr	tct Ser	acc Thr	agg Arg	ata Ile 295	gag Glu	gtg Val	ttg Leu	gaa Glu	gag Glu 300	ata Ile	gcg Ala	aat Asn	gag Glu	912
cac (His (gag Glu	ata Ile	gta Val	ccc Pro	ctc Leu 310	att Ile	ctc Leu	gag Glu	tac Tyr	aga Arg 315	aag Lys	atc Ile	cag Gln	aaa Lys	ctg Leu 320	960
aaa Lys																1008
gga Gly	aga Arg	att Ile	cat His 340	gca Ala	tct Ser	ttc Phe	cac His	cag Gln 345	acg Thr	ggt Gly	acc Thr	gcc Ala	act Thr 350	ggc Gly	agg Arg	1056
ttg Leu	agt Ser	agc Ser 355	agt Ser	gat Asp	cca Pro	aat Asn	ctt Leu 360	cag Gln	aat Asn	ctt Leu	ccg Pro	aca Thr 365	aag Lys	agc Ser	gaa Glu	1104
gag Glu	gga Gly 370	aaa Lys	gaa Glu	att Ile	aga Arg	aaa Lys 375	gcg Ala	att Ile	gtg Val	ccc Pro	cag Gln 380	gat Asp	cca Pro	gac Asp	tgg Trp	1152

					gat Asp 390											120	0
cat His	ctc Leu	agt Ser	ggt Gly	gat Asp 405	gag Glu	aac Asn	ctt Leu	gtg Val	aag Lys 410	gcc Ala	ttc Phe	gag Glu	gag Glu	ggc Gly 415	atc Ile	124	8
					act Thr											129	6
					atg Met											134	4
					aca Thr											139	2
					gaa Glu 470											144	0
					tac Tyr											148	8
					act Thr											153	6
					aag Lys											158	4
					cag Gln											163	2
					gag Glu 550											168	0
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Glu Val Pro Ser Phe Ala Leu Asp Leu Glu Thr Ser Ser Leu Asp Pro 35 40 45

Phe Asn Cys Glu Ile Val Gly Ile Ser Val Ser Phe Lys Pro Lys Thr 50 60

Ala Tyr Tyr Ile Pro Leu His His Arg Asn Ala Gln Asn Leu Asp Glu 65 70 75 80

Thr Leu Val Leu Ser Lys Leu Lys Glu Ile Leu Glu Asp Pro Ser Ser 85 90 95

Lys Ile Val Gly Gln Asn Leu Lys Tyr Ala Tyr Lys Val Leu Met Val

Lys Gly Ile Ser Pro Val Tyr Pro His Phe Asp Thr Met Ile Ala Ala 115 120 125

Tyr Leu Leu Glu Pro Asn Glu Lys Lys Phe Asn Leu Glu Asp Leu Ser 130 135 140

Leu Lys Phe Leu Gly Tyr Lys Met Thr Ser Tyr Gln Glu Leu Met Ser 145 $$ 150 $$ 155 $$ 160

Phe Ser Ser Pro Leu Phe Gly Phe Ser Phe Ala Asp Val Pro Val Asp 165 170 175

Lys Ala Ala Asn Tyr Ser Cys Glu Asp Ala Asp Ile Thr Tyr Arg Leu 180 185 Tyr Lys Ile Leu Ser Met Lys Leu His Glu Ala Glu Leu Glu Asn Val Phe Tyr Arg Ile Glu Met Pro Leu Val Asn Val Leu Ala Arg Met Glu 215 Leu Asn Gly Val Tyr Val Asp Thr Glu Phe Leu Lys Lys Leu Ser Glu Glu Tyr Gly Lys Lys Leu Glu Glu Leu Ala Glu Lys Ile Tyr Gln Ile Ala Gly Glu Pro Phe Asn Ile Asn Ser Pro Lys Gln Val Ser Lys Ile Leu Phe Glu Lys Leu Gly Ile Lys Pro Arg Gly Lys Thr Thr Lys Thr Gly Ala Tyr Ser Thr Arg Ile Glu Val Leu Glu Glu Ile Ala Asn Glu 295 290 His Glu Ile Val Pro Leu Ile Leu Glu Tyr Arg Lys Ile Gln Lys Leu 305 310 Lys Ser Thr Tyr Ile Asp Thr Leu Pro Lys Leu Val Asn Pro Lys Thr 325 Gly Arg Ile His Ala Ser Phe His Gln Thr Gly Thr Ala Thr Gly Arg Leu Ser Ser Ser Asp Pro Asn Leu Gln Asn Leu Pro Thr Lys Ser Glu 355 360 Glu Gly Lys Glu Ile Arg Lys Ala Ile Val Pro Gln Asp Pro Asp Trp Trp Ile Val Ser Ala Asp Tyr Ser Gln Ile Glu Leu Arg Ile Leu Ala 395 390 His Leu Ser Gly Asp Glu Asn Leu Val Lys Ala Phe Glu Glu Gly Ile Asp Val His Thr Leu Thr Ala Ser Arg Ile Tyr Asn Val Lys Pro Glu 420 425 430

Glu Val Asn Glu Glu Met Arg Arg Val Gly Lys Met Val Asn Phe Ser 435 440 445

Ile Ile Tyr Gly Val Thr Pro Tyr Gly Leu Ser Val Arg Leu Gly Ile 450 455 460

Pro Val Lys Glu Ala Glu Lys Met Ile Ile Ser Tyr Phe Thr Leu Tyr 465 470 475 480

Pro Lys Val Arg Ser Tyr Ile Gln Gln Val Val Ala Glu Ala Lys Glu
485 490 495

Lys Gly Tyr Val Arg Thr Leu Phe Gly Arg Lys Arg Asp Ile Pro Gln 500 505 510

Leu Met Ala Arg Asp Lys Asn Thr Gln Ser Glu Gly Glu Arg Ile Ala 515 520 525

Ile Asn Thr Pro Ile Gln Gly Thr Ala Ala Asp Ile Ile Lys Leu Ala 530 540

Met Ile Asp Ile Asp Glu Glu Leu Arg Lys Arg Asn Met Lys Ser Arg 545 550 555

Met Ile Ile Gln Val His Asp Glu Leu Val Phe Glu Val Pro Asp Glu 565 570 575

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gag gtt cca tct ttt gcc ctg gcc ctt gaa acg tcc tcc ctt gac ccg Glu Val Pro Ser Phe Ala Leu Ala Leu Glu Thr Ser Ser Leu Asp Pro 35 40 45	144
ttc aac tgt gag ata gtc ggc atc tcc gtg tcg ttc aaa ccg aaa aca Phe Asn Cys Glu Ile Val Gly Ile Ser Val Ser Phe Lys Pro Lys Thr 50 55 60	192
gct tat tac att cca ctt cat cac aga aac gcc cag aat ctt gat gaa Ala Tyr Tyr Ile Pro Leu His His Arg Asn Ala Gln Asn Leu Asp Glu 65 70 75 80	240
aca ctg gtg ctg tcg aag ttg aaa gag atc ctc gaa gac ccg tct tcg Thr Leu Val Leu Ser Lys Leu Lys Glu Ile Leu Glu Asp Pro Ser Ser 85 90 95	288
aag att gtg ggt cag aac ctg aag tac gcg tac aag gtt ctt atg gta Lys Ile Val Gly Gln Asn Leu Lys Tyr Ala Tyr Lys Val Leu Met Val 100 105 110	336
aag ggt ata tcg cca gtt tat ccg cat ttt gac acg atg ata gct gca Lys Gly Ile Ser Pro Val Tyr Pro His Phe Asp Thr Met Ile Ala Ala 115 120 125	384
tat ttg ctg gag cca aac gag aaa aaa ttc aat ctc gaa gat ctg tct Tyr Leu Leu Glu Pro Asn Glu Lys Lys Phe Asn Leu Glu Asp Leu Ser 130 135	432
ttg aaa ttt ctc gga tac aaa atg acg tct tat cag gaa ctg atg tcg Leu Lys Phe Leu Gly Tyr Lys Met Thr Ser Tyr Gln Glu Leu Met Ser 145 150 150	480
ttt tcc tca cca ctt ttt ggt ttc agc ttt gcg gat gtt ccg gta gac Phe Ser Ser Pro Leu Phe Gly Phe Ser Phe Ala Asp Val Pro Val Asp 165 170 175	528
aag gct gcg aac tac tcc tgc gag gat gca gac atc act tat agg ctc Lys Ala Ala Asn Tyr Ser Cys Glu Asp Ala Asp Ile Thr Tyr Arg Leu 180 185 190	576
tac aag ata ctc agc atg aag ctc cat gaa gcg gaa ctt gag aac gtc Tyr Lys Ile Leu Ser Met Lys Leu His Glu Ala Glu Leu Glu Asn Val 195 200 205	624
ttc tac agg ata gag atg ccg ctt gtg aac gtt ctt gca cgc atg gaa Phe Tyr Arg Ile Glu Met Pro Leu Val Asn Val Leu Ala Arg Met Glu 210 215	672

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gca Ala	gga Gly	gag Glu	ccc Pro 260	ttc Phe	aac Asn	atc Ile	aat Asn	tct Ser 265	cca Pro	aaa Lys	cag Gln	gtt Val	tca Ser 270	aag Lys	atc Ile	816
ctt Leu	ttt Phe	gag Glu 275	aag Lys	ctg Leu	gga Gly	ata Ile	aaa Lys 280	ccc Pro	cgt Arg	gga Gly	aaa Lys	acg Thr 285	aca Thr	aaa Lys	aca Thr	864
gga Gly	gcg Ala 290	tac Tyr	tct Ser	acc Thr	agg Arg	ata Ile 295	gag Glu	gtg Val	ttg Leu	gaa Glu	gag Glu 300	ata Ile	gcg Ala	aat Asn	gag Glu	912
cac His 305	gag Glu	ata Ile	gta Val	ccc Pro	ctc Leu 310	att Ile	ctc Leu	gag Glu	tac Tyr	aga Arg 315	aag Lys	atc Ile	cag Gln	aaa Lys	ctg Leu 320	960
aaa Lys	tcg Ser	acc Thr	tac Tyr	ata Ile 325	gac Asp	acc Thr	ctt Leu	ccg Pro	aaa Lys 330	ctt Leu	gtg Val	aac Asn	ccg Pro	aaa Lys 335	acc Thr	1008
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ttg Leu	agt Ser	agc Ser 355	agt Ser	gat Asp	cca Pro	aat Asn	ctt Leu 360	cag Gln	aat Asn	ctt Leu	ccg Pro	aca Thr 365	aag Lys	agc Ser	gaa Glu	1104
											cag Gln 380					1152
tgg Trp 385	atc Ile	gtc Val	agt Ser	gcg Ala	gat Asp 390	tat Tyr	tcc Ser	caa Gln	ata Ile	gaa Glu 395	ctc Leu	aga Arg	atc Ile	ctc Leu	gct Ala 400	1200
cat His	ctc Leu	agt Ser	ggt Gly	gat Asp 405	gag Glu	aac Asn	ctt Leu	gtg Val	aag Lys 410	gcc Ala	ttc Phe	gag Glu	gag Glu	ggc Gly 415	atc Ile	1248
gat Asp	gtg Val	cac His	acc Thr 420	ttg Leu	act Thr	gcc Ala	tcc Ser	agg Arg 425	atc Ile	tac Tyr	aac Asn	gta Val	aag Lys 430	cca Pro	gaa Glu	1296
gaa Glu	gtg Val	aac Asn 435	gaa Glu	gaa Glu	atg Met	cga Arg	cgg Arg 440	gtt Val	gga Gly	aag Lys	atg Met	gtg Val 445	aac Asn	ttc Phe	tct Ser	1344
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cca aag gtg cga Pro Lys Val Arg	agc tac atc Ser Tyr Ile 485	cag cag gtt Gln Gln Val 490	gtt gca gag gca Val Ala Glu Ala	aaa gag 1488 Lys Glu 495
aag ggc tac gtc Lys Gly Tyr Val 500	agg act ctc Arg Thr Leu	ttt gga aga Phe Gly Arg 505	aaa aga gat att Lys Arg Asp Ile 510	Pro Gln
ctc atg gca agg Leu Met Ala Arg 515	gac aag aac Asp Lys Asn	acc cag tcc Thr Gln Ser 520	gaa ggc gaa aga Glu Gly Glu Arg 525	atc gca 1584 Ile Ala
ata aac acc ccc Ile Asn Thr Pro 530	att cag gga Ile Gln Gly 535	acg gcg gca Thr Ala Ala	gat ata ata aaa Asp Ile Ile Lys 540	ttg gct 1632 Leu Ala
atg ata gat ata Met Ile Asp Ile 545	gac gag gag Asp Glu Glu 550	ctg aga aaa Leu Arg Lys	aga aac atg aaa Arg Asn Met Lys 555	tcc aga 1680 Ser Arg 560
atg atc att cag Met Ile Ile Gln	gtt cat gac Val His Asp 565	gaa ctg gtc Glu Leu Val 570	ttc gag gtt ccc Phe Glu Val Pro	gat gag 1728 Asp Glu 575
gaa aaa gaa gaa Glu Lys Glu Glu 580	cta gtt gat Leu Val Asp	ctg gtg aag Leu Val Lys 585	aac aaa atg aca Asn Lys Met Thr 590	Asn Val
gtg aaa ctc tct Val Lys Leu Ser 595	gtg cct ctt Val Pro Leu	gag gtt gac Glu Val Asp 600	ata agc atc gga Ile Ser Ile Gly 605	aaa agc 1824 Lys Ser
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Ile Val Lys Asp 20	His Lys Thr	Phe Glu Asp 25	Leu Ile Glu Ly:	s Leu Lys

Glu Val Pro Ser Phe Ala Leu Ala Leu Glu Thr Ser Ser Leu Asp Pro Phe Asn Cys Glu Ile Val Gly Ile Ser Val Ser Phe Lys Pro Lys Thr Ala Tyr Tyr Ile Pro Leu His His Arg Asn Ala Gln Asn Leu Asp Glu Thr Leu Val Leu Ser Lys Leu Lys Glu Ile Leu Glu Asp Pro Ser Ser Lys Ile Val Gly Gln Asn Leu Lys Tyr Ala Tyr Lys Val Leu Met Val 105 Lys Gly Ile Ser Pro Val Tyr Pro His Phe Asp Thr Met Ile Ala Ala 120 Tyr Leu Leu Glu Pro Asn Glu Lys Lys Phe Asn Leu Glu Asp Leu Ser 130 135 Leu Lys Phe Leu Gly Tyr Lys Met Thr Ser Tyr Gln Glu Leu Met Ser 150 155 145 Phe Ser Ser Pro Leu Phe Gly Phe Ser Phe Ala Asp Val Pro Val Asp 170 Lys Ala Ala Asn Tyr Ser Cys Glu Asp Ala Asp Ile Thr Tyr Arg Leu Tyr Lys Ile Leu Ser Met Lys Leu His Glu Ala Glu Leu Glu Asn Val Phe Tyr Arg Ile Glu Met Pro Leu Val Asn Val Leu Ala Arg Met Glu 210 Leu Asn Gly Val Tyr Val Asp Thr Glu Phe Leu Lys Lys Leu Ser Glu Glu Tyr Gly Lys Lys Leu Glu Glu Leu Ala Glu Lys Ile Tyr Gln Ile

270

Ala Gly Glu Pro Phe Asn Ile Asn Ser Pro Lys Gln Val Ser Lys Ile 265

Leu Phe Glu Lys Leu Gly Ile Lys Pro Arg Gly Lys Thr Thr Lys Thr Gly Ala Tyr Ser Thr Arg Ile Glu Val Leu Glu Glu Ile Ala Asn Glu 290 295 His Glu Ile Val Pro Leu Ile Leu Glu Tyr Arg Lys Ile Gln Lys Leu Lys Ser Thr Tyr Ile Asp Thr Leu Pro Lys Leu Val Asn Pro Lys Thr Gly Arg Ile His Ala Ser Phe His Gln Thr Gly Thr Ala Thr Gly Arg Leu Ser Ser Ser Asp Pro Asn Leu Gln Asn Leu Pro Thr Lys Ser Glu Glu Gly Lys Glu Ile Arg Lys Ala Ile Val Pro Gln Asp Pro Asp Trp Trp Ile Val Ser Ala Asp Tyr Ser Gln Ile Glu Leu Arg Ile Leu Ala His Leu Ser Gly Asp Glu Asn Leu Val Lys Ala Phe Glu Glu Gly Ile 405 415 Asp Val His Thr Leu Thr Ala Ser Arg Ile Tyr Asn Val Lys Pro Glu Glu Val Asn Glu Glu Met Arg Arg Val Gly Lys Met Val Asn Phe Ser Ile Ile Tyr Gly Val Thr Pro Tyr Gly Leu Ser Val Arg Leu Gly Ile Pro Val Lys Glu Ala Glu Lys Met Ile Ile Ser Tyr Phe Thr Leu Tyr 470 465 Pro Lys Val Arg Ser Tyr Ile Gln Gln Val Val Ala Glu Ala Lys Glu Lys Gly Tyr Val Arg Thr Leu Phe Gly Arg Lys Arg Asp Ile Pro Gln

Leu Met Ala Arg Asp Lys Asn Thr Gln Ser Glu Gly Glu Arg Ile Ala

Ile Asn Thr Pro Ile Gln Gly Thr Ala Ala Asp Ile Ile Lys Leu Ala Met Ile Asp Ile Asp Glu Glu Leu Arg Lys Arg Asn Met Lys Ser Arg 555 Met Ile Ile Gln Val His Asp Glu Leu Val Phe Glu Val Pro Asp Glu Glu Lys Glu Glu Leu Val Asp Leu Val Lys Asn Lys Met Thr Asn Val Val Lys Leu Ser Val Pro Leu Glu Val Asp Ile Ser Ile Gly Lys Ser Trp Ser 610 <210> 36 <211> 1716 <212> DNA <213> Artificial/Unknown <220> <221> misc feature <223> Synthetic <220> <221> CDS <222> (1)..(1713) <400> 36 atg ctt gaa acg tcc tcc ctt gac ccg ttc aac tgt gag ata gtc ggc 48 Met Leu Glu Thr Ser Ser Leu Asp Pro Phe Asn Cys Glu Ile Val Gly atc tcc gtg tcg ttc aaa ccg aaa aca gct tat tac att cca ctt cat 96 Ile Ser Val Ser Phe Lys Pro Lys Thr Ala Tyr Tyr Ile Pro Leu His 20 25 cac aga aac gcc cag aat ctt gat gaa aca ctg gtg ctg tcg aag ttg 144 His Arg Asn Ala Gln Asn Leu Asp Glu Thr Leu Val Leu Ser Lys Leu aaa gag atc ctc gaa gac ccg tct tcg aag att gtg ggt cag aac ctg Lys Glu Ile Leu Glu Asp Pro Ser Ser Lys Ile Val Gly Gln Asn Leu 192 50 55

aag Lys 65	tac Tyr	gac Asp	tac Tyr	aag Lys	gtt Val 70	ctt Leu	atg Met	gta Val	aag Lys	ggt Gly 75	ata Ile	tcg Ser	cca Pro	gtt Val	tat Tyr 80	2	240
					atg Met											2	88
					gaa Glu											3	336
atg Met	acg Thr	tct Ser 115	tat Tyr	cag Gln	gaa Glu	ctg Leu	atg Met 120	tcg Ser	ttt Phe	tcc Ser	tca Ser	cca Pro 125	ctt Leu	ttt Phe	ggt Gly	3	884
					gtt Val											4	132
					act Thr 150											4	180
ctc Leu	cat His	gaa Glu	gcg Ala	gaa Glu 165	ctt Leu	gag Glu	aac Asn	gtc Val	ttc Phe 170	tac Tyr	agg Arg	ata Ile	gag Glu	atg Met 175	ccg Pro	Ē	528
ctt Leu	gtg Val	aac Asn	gtt Val 180	ctt Leu	gca Ala	cgc Arg	atg Met	gaa Glu 185	ttg Leu	aac Asn	ggg Gly	gtg Val	tat Tyr 190	gtg Val	gac Asp	Š	576
					aag Lys											6	524
					atc Ile											6	572
					gtt Val 230											-	720
aaa Lys	ccc Pro	cgt Arg	gga Gly	aaa Lys 245	acg Thr	aca Thr	aaa Lys	aca Thr	gga Gly 250	gcg Ala	tac Tyr	tct Ser	acc Thr	agg Arg 255	ata Ile	•	768
gag Glu	gtg Val	ttg Leu	gaa Glu 260	gag Glu	ata Ile	gcg Ala	aat Asn	gag Glu 265	cac His	gag Glu	ata Ile	gta Val	ccc Pro 270	ctc Leu	att Ile	8	816
ctc Leu	gag Glu	tac Tyr 275	aga Arg	aag Lys	atc Ile	cag Gln	aaa Lys 280	ctg Leu	aaa Lys	tcg Ser	acc Thr	tac Tyr 285	ata Ile	gac Asp	acc Thr	1	864
ctt Leu	ccg Pro 290	aaa Lys	ctt Leu	gtg Val	aac Asn	ccg Pro 295	aaa Lys	acc Thr	gga Gly	aga Arg	att Ile 300	cat His	gca Ala	tct Ser	ttc Phe	!	912

					gcc Ala 310											90	60
					aca Thr											10	8 0
					gat Asp											10	56
					aga Arg											11	04
ctt Leu	gtg Val 370	aag Lys	gcc Ala	ttc Phe	gag Glu	gag Glu 375	ggc Gly	atc Ile	gat Asp	gtg Val	cac His 380	acc Thr	ttg Leu	act Thr	gcc Ala	11	52
					gta Val 390											12	00
					gtg Val											12	48
					aga Arg											12	96
					ttc Phe											13	44
cag Gln	cag Gln 450	gtt Val	gtt Val	gca Ala	gag Glu	gca Ala 455	aaa Lys	gag Glu	aag Lys	ggc Gly	tac Tyr 460	gtc Val	agg Arg	act Thr	ctc Leu	13	92
					gat Asp 470											14	40
					gaa Glu											14	88
					ata Ile											15	36
					atg Met											15	84
					gtt Val											16	32

ctg gtg aag aac aaa atg aca aat gtg gtg aaa ctc tct gtg cct ctt Leu Val Lys Asn Lys Met Thr Asn Val Val Lys Leu Ser Val Pro Leu 545 550 560	1680
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Lys Glu Ile Leu Glu Asp Pro Ser Ser Lys Ile Val Gly Gln Asn Leu 50 60	
Lys Tyr Asp Tyr Lys Val Leu Met Val Lys Gly Ile Ser Pro Val Tyr 65 70 75 80	
Pro His Phe Asp Thr Met Ile Ala Ala Tyr Leu Leu Glu Pro Asn Glu 85 90 95	
Lys Lys Phe Asn Leu Glu Asp Leu Ser Leu Lys Phe Leu Gly Tyr Lys	
Met Thr Ser Tyr Gln Glu Leu Met Ser Phe Ser Ser Pro Leu Phe Gly 115 120 125	
Phe Ser Phe Ala Asp Val Pro Val Asp Lys Ala Ala Asn Tyr Ser Cys 130 135 140	
Glu Asp Ala Asp Ile Thr Tyr Arg Leu Tyr Lys Ile Leu Ser Met Lys 145 150 155 160	

Leu His Glu Ala Glu Leu Glu Asn Val Phe Tyr Arg Ile Glu Met Pro Leu Val Asn Val Leu Ala Arg Met Glu Leu Asn Gly Val Tyr Val Asp Thr Glu Phe Leu Lys Lys Leu Ser Glu Glu Tyr Gly Lys Lys Leu Glu Glu Leu Ala Glu Lys Ile Tyr Gln Ile Ala Gly Glu Pro Phe Asn Ile Asn Ser Pro Lys Gln Val Ser Lys Ile Leu Phe Glu Lys Leu Gly Ile Lys Pro Arg Gly Lys Thr Thr Lys Thr Gly Ala Tyr Ser Thr Arg Ile 245 Glu Val Leu Glu Glu Ile Ala Asn Glu His Glu Ile Val Pro Leu Ile Leu Glu Tyr Arg Lys Ile Gln Lys Leu Lys Ser Thr Tyr Ile Asp Thr Leu Pro Lys Leu Val Asn Pro Lys Thr Gly Arg Ile His Ala Ser Phe 300 His Gln Thr Gly Thr Ala Thr Gly Arg Leu Ser Ser Ser Asp Pro Asn Leu Gln Asn Leu Pro Thr Lys Ser Glu Glu Gly Lys Glu Ile Arg Lys 330 Ala Ile Val Pro Gln Asp Pro Asp Trp Trp Ile Val Ser Ala Asp Tyr 345 Ser Gln Ile Glu Leu Arg Ile Leu Ala His Leu Ser Gly Asp Glu Asn 360 365 355 Leu Val Lys Ala Phe Glu Glu Gly Ile Asp Val His Thr Leu Thr Ala 370 Ser Arg Ile Tyr Asn Val Lys Pro Glu Glu Val Asn Glu Glu Met Arg 395

Arg Val Gly Lys Met Val Asn Phe Ser Ile Ile Tyr Gly Val Thr Pro $405 \hspace{1.5cm} 410 \hspace{1.5cm} 415$

Tyr Gly Leu Ser Val Arg Leu Gly Ile Pro Val Lys Glu Ala Glu Lys 420 425 430

Met Ile Ile Ser Tyr Phe Thr Leu Tyr Pro Lys Val Arg Ser Tyr Ile 435 440 445

Gln Gln Val Val Ala Glu Ala Lys Glu Lys Gly Tyr Val Arg Thr Leu 450 460

Phe Gly Arg Lys Arg Asp Ile Pro Gln Leu Met Ala Arg Asp Lys Asn 465 470 475

Thr Gln Ser Glu Gly Glu Arg Ile Ala Ile Asn Thr Pro Ile Gln Gly 485 490 495

Thr Ala Ala Asp Ile Ile Lys Leu Ala Met Ile Asp Ile Asp Glu Glu 500 505 510

Leu Arg Lys Arg Asn Met Lys Ser Arg Met Ile Ile Gln Val His Asp 515 520 525

Glu Leu Val Phe Glu Val Pro Asp Glu Glu Lys Glu Glu Leu Val Asp 530 540

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gga Gly	tac Tyr	aaa Lys 35	atg Met	acg Thr	tct Ser	tat Tyr	cag Gln 40	gaa Glu	ctg Leu	atg Met	tcg Ser	ttt Phe 45	tcc Ser	tca Ser	cca Pro	1	L44
ctt Leu	ttt Phe 50	ggt Gly	ttc Phe	agc Ser	ttt Phe	gcg Ala 55	gat Asp	gtt Val	ccg Pro	gta Val	gac Asp 60	aag Lys	gct Ala	gcg Ala	aac Asn	1	192
tac Tyr 65	tcc Ser	tgc Cys	gag Glu	gat Asp	gca Ala 70	gac Asp	atc Ile	act Thr	tat Tyr	agg Arg 75	ctc Leu	tac Tyr	aag Lys	ata Ile	ctc Leu 80	2	240
agc Ser	atg Met	aag Lys	ctc Leu	cat His 85	gaa Glu	gcg Ala	gaa Glu	ctt Leu	gag Glu 90	aac Asn	gtc Val	ttc Phe	tac Tyr	agg Arg 95	ata Ile	2	288
gag Glu	atg Met	ccg Pro	ctt Leu 100	gtg Val	aac Asn	gtt Val	ctt Leu	gca Ala 105	cgc Arg	atg Met	gaa Glu	ttg Leu	aac Asn 110	ggg Gly	gtg Val	3	336
tat Tyr	gtg Val	gac Asp 115	aca Thr	gaa Glu	ttc Phe	ctg Leu	aaa Lys 120	aag Lys	ctc Leu	tcg Ser	gag Glu	gag Glu 125	tac Tyr	ggc Gly	aaa Lys	3	384
aag Lys	ctc Leu 130	gag Glu	gaa Glu	ctg Leu	gcc Ala	gaa Glu 135	aaa Lys	atc Ile	tac Tyr	cag Gln	ata Ile 140	gca Ala	gga Gly	gag Glu	ccc Pro	4	432
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acc Thr	agg Arg	Ile	gag Glu 180	Val	ttg Leu	Glu	Glu	Ile	Ala	aat Asn	gag Glu	cac His	gag Glu 190	Ile	gta Val	!	576
ccc Pro	ctc Leu	att Ile 195	Leu	gag Glu	tac Tyr	aga Arg	a a g Lys 200	Ile	cag Gln	aaa Lys	ctg Leu	aaa Lys 205	Ser	acc Thr	tac Tyr	•	624
ata Ile	gac Asp 210	Thr	ctt Leu	ccg Pro	aaa Lys	ctt Leu 215	Val	aac Asn	ccg Pro	aaa Lys	acc Thr 220	Gly	aga Arg	att Ile	cat His	1	672

gca Ala 225	tct Ser	ttc Phe	cac His	cag Gln	acg Thr 230	ggt Gly	acc Thr	gcc Ala	act Thr	ggc Gly 235	agg Arg	ttg Leu	agt Ser	agc Ser	agt Ser 240	720
													gga Gly			768
													atc Ile 270			816
gcg Ala	gat Asp	tat Tyr 275	tcc Ser	caa Gln	ata Ile	gaa Glu	ctc Leu 280	aga Arg	atc Ile	ctc Leu	gct Ala	cat His 285	ctc Leu	agt Ser	ggt Gly	864
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ttg Leu 305	act Thr	gcc Ala	tcc Ser	agg Arg	atc Ile 310	tac Tyr	aac Asn	gta Val	aag Lys	cca Pro 315	gaa Glu	gaa Glu	gtg Val	aac Asn	gaa Glu 320	960
gaa Glu	atg Met	cga Arg	cgg Arg	gtt Val 325	gga Gly	aag Lys	atg Met	gtg Val	aac Asn 330	ttc Phe	tct Ser	ata Ile	ata Ile	tac Tyr 335	ggt Gly	1008
gtc Val	aca Thr	ccg Pro	tac Tyr 340	ggt Gly	ctt Leu	tct Ser	gtg Val	aga Arg 345	ctt Leu	gga Gly	ata Ile	ccg Pro	gtt Val 350	aaa Lys	gaa Glu	1056
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agg Arg 385	act Thr	ctc Leu	ttt Phe	gga Gly	aga Arg 390	aaa Lys	aga Arg	gat As p	att Ile	ccc Pro 395	cag Gln	ctc Leu	atg Met	gca Ala	agg Arg 400	1200
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att Ile	cag Gln	gga Gly	acg Thr 420	gcg Ala	gca Ala	gat Asp	ata Ile	ata Ile 425	aaa Lys	ttg Leu	gct Ala	atg Met	ata Ile 430	gat Asp	ata Ile	1296
gac Asp	gag Glu	gag Glu 435	ctg Leu	aga Arg	aaa Lys	aga Arg	aac Asn 440	atg Met	aaa Lys	tcc Ser	aga Arg	atg Met 445	atc Ile	att Ile	cag Gln	1344
gtt Val	cat His 450	gac Asp	gaa Glu	ctg Leu	gtc Val	ttc Phe 455	gag Glu	gtt Val	ccc Pro	gat Asp	gag Glu 460	gaa Glu	aaa Lys	gaa Glu	gaa Glu	1392

cta gtt gat ctg gtg aag aac aaa atg aca aat gtg gtg aaa ctc tct 1440 Leu Val Asp Leu Val Lys Asn Lys Met Thr Asn Val Val Lys Leu Ser gtg cct ctt gag gtt gac ata agc atc gga aaa agc tgg tct tga Val Pro Leu Glu Val Asp Ile Ser Ile Gly Lys Ser Trp Ser 1485 490 485 <210> 39 <211> 494 <212> PRT <213> Artificial/Unknown <220> <221> misc feature <223> Synthetic <400> 39 Met Lys Glu Leu Gln Leu Tyr Glu Glu Ala Glu Pro Thr Gly Tyr Glu Ile Val Lys Asp His Lys Thr Phe Glu Asp Leu Ser Leu Lys Phe Leu Gly Tyr Lys Met Thr Ser Tyr Gln Glu Leu Met Ser Phe Ser Ser Pro Leu Phe Gly Phe Ser Phe Ala Asp Val Pro Val Asp Lys Ala Ala Asn Tyr Ser Cys Glu Asp Ala Asp Ile Thr Tyr Arg Leu Tyr Lys Ile Leu 75 70 Ser Met Lys Leu His Glu Ala Glu Leu Glu Asn Val Phe Tyr Arg Ile Glu Met Pro Leu Val Asn Val Leu Ala Arg Met Glu Leu Asn Gly Val 100 Tyr Val Asp Thr Glu Phe Leu Lys Lys Leu Ser Glu Glu Tyr Gly Lys Lys Leu Glu Glu Leu Ala Glu Lys Ile Tyr Gln Ile Ala Gly Glu Pro 130 135 Phe Asn Ile Asn Ser Pro Lys Gln Val Ser Lys Ile Leu Phe Glu Lys 155 150

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Thr	Arg	Ile	Glu 180	Val	Leu	Glu	Glu	Ile 185	Ala	Asn	Glu	His	Glu 190	Ile	Val
Pro	Leu	Ile 195	Leu	Glu	Tyr	Arg	Lys 200	Ile	Gln	Lys	Leu	Lys 205	Ser	Thr	Tyr
Ile	Asp 210	Thr	Leu	Pro	Lys	Leu 215	Val	Asn	Pro	Lys	Thr 220	Gly	Arg	Ile	His
Ala 225	Ser	Phe	His	Gln	Thr 230	Gly	Thr	Ala	Thr	Gly 235	Arg	Leu	Ser	Ser	Ser 240
Asp	Pro	Asn	Leu	Gln 245	Asn	Leu	Pro	Thr	Lys 250	Ser	Glu	Glu	Gly	Lys 255	Glu
Ile	Arg	Lys	Ala 260	Ile	Val	Pro	Gln	Asp 265	Pro	Asp	Trp	Trp	Ile 270	Val	Ser
Ala	Asp	Tyr 275	Ser	Gln	Ile	Glu	Leu 280	Arg	Ile	Leu	Ala	His 285	Leu	Ser	Gly
Asp	Glu 290	Asn	Leu	Val	Lys	Ala 295	Phe	Glu	Glu	Gly	Ile 300	Asp	Val	His	Thr
Leu 305	Thr	Ala	Ser	Arg	Ile 310	Tyr	Asn	Val	Lys	Pro 315	Glu	Glu	Val	Asn	Glu 320
Glu	Met	Arg	Arg	Val 325	Gly	Lys	Met	Val	Asn 330	Phe	Ser	Ile	Ile	Tyr 335	Gly
Val	Thr	Pro	Tyr 340	Gly	Leu	Ser	Val	Arg 345	Leu	Gly	Ile	Pro	Val 350	Lys	Glu
		355					360					365	Lys		
	370					375					380		Gly		
Arg		Leu	Phe	Gly	Arg		Arg	Asp	Ile	Pro	Gln	Leu	Met	Ala	Arg 400

Asp L	ys P	Asn	Thr	Gln 405	Ser	Glu	Gly	Glu	Arg 410	Ile	Ala	Ile	Asn	Thr 415	Pro		
Ile G	ln (Thr 420	Ala	Ala	Asp	Ile	Ile 425	Lys	Leu	Ala	Met	Ile 430	Asp	Ile		
Asp G		3lu 135	Leu	Arg	Lys	Arg	Asn 440	Met	Lys	Ser	Arg	Met 445	Ile	Ile	Gln		
Val H	is <i>I</i> 50	Asp	Glu	Leu	Val	Phe 455	Glu	Val	Pro	Asp	Glu 460	Glu	Lys	Glu	Glu		
Leu V 465	al P	Asp	Leu	Val	Lys 470	Asn	Lys	Met	Thr	Asn 475	Val	Val	Lys	Leu	Ser 480		
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